

Received : January, 2011; Accepted : February, 2011

Effect of anaemia on physical performance of the coalmine workers and the impact of iron supplementation

M. DAS AND B. BAROOVA

ABSTRACT

The effect of iron supplementation on the physical performance of the coalmine workers was studied. 300 samples were screened from 600 samples and were pair matched for haemoglobin and weight and three groups were formed namely Placebo, Group I and Group II consisting of 100 samples in each group. Group I and Group II received 60 mg and 120 mg of elemental iron and the Placebo received sugar coated tablets at a stretch for 180 days. Data on haemoglobin, Harvard step test, pre and post exercise pulse rate were collected at 0 days (baseline), 90 days (mid intervention), 180 days (final intervention) and 270 days (post intervention). Results revealed that both the dose levels significantly improved the endurance capacity and decreased the post exercise pulse rate but the performance was higher with 120 mg dose level. Performance of step test was significantly correlated with haemoglobin indicating the anaemia affected the workers ability to perform the test of physical endurance.

Das, M. and Baroova, B. (2011). Effect of anaemia on physical performance of the coalmine workers and the impact of iron supplementation, *Food Sci. Res. J.*, 2 (1) : 31-36.

Key words : Anaemia, Physical performance, Pulse rate, Haemoglobin

INTRODUCTION

Iron deficiency anaemia affects the physical capacity by reducing the availability of oxygen to the tissues which in turn affects cardiac output and the heart. It also reduces the efficiency of oxygen exchange in muscle and myoglobin. High prevalence of anaemia in developing countries assumes great importance because it may limit physical work capacity (PWC). Some studies have shown that anaemia and underweight workers are less productive than their better nourished co-workers (Wolgemuth *et al.*, 1982). Other studies by Gardner *et al.* (1977) indicated that subjects with lower haemoglobin concentration had lower work capacity and that elevation of haemoglobin concentration by iron treatment resulted in an increase in work capacity. Literature documented that there is hardly any studies to measure the productivity of coalmine workers and changes in productivity after iron supplementation. Hence, the present study was undertaken with the following objectives to find out effect of anaemia on the physical performance of coalmine workers, impact of iron supplementation on physical performance and to

assess the relative stress of exercise imposed before and after iron supplementation on the physical efficiency of coalmine workers.

MATERIALS AND METHODS

Subject and study design:

Three hundred samples were screened from six hundred samples and the samples were pair matched for haemoglobin level and weight. Pairs were randomly assigned as Placebo- receiving a sugar coated tablet, Group 1 – receiving 60 mg of elemental iron and Group II – receiving 120 mg of elemental iron. Each group consisted of one hundred samples and received oral supplementation at a stretch for 180 days. Data on physical performance, haemoglobin and pre-exercise and post-exercise pulse rate were collected at baseline (0 days), mid intervention (90 days), final intervention (180 days) and post final intervention (270 days), following the withdrawal of supplements.

Experimental procedure:

Haemoglobin was estimated by the